**Mechanisms of Tumor Relapse: The Good, the Bad, and the Ugly of Cancer Therapeutics**

A healthy cell becomes cancerous when an acquired mutation provides a growth advantage. This allows the single cancer cell to continue to grow and divide eventually giving rise to a tumor. Historically oncologists have used general chemotherapeutics, drugs that target rapidly dividing cells, to treat cancer patients. While these drugs can be very efficient at killing cancer cells, they also lead to sever side effects. In recent years, scientists and physicians have worked together to identify specific biological mechanisms that are unique to cancer cells in order to develop targeted therapies that kill cancer cells while leaving healthy cells intact. But even these strategies are not always successful, and some cancer cells can become resistant to targeted therapies leading to tumor recurrence. Our laboratory focuses on a cellular recycling process called autophagy and we think cancer cells are addicted to this pathway to generate nutrients that help them continue to grow and divide. We are currently trying to target this pathway in cancer patients. We use molecular biology and cell biology techniques to understand how cancer cells might become resistant to drugs that block these recycling pathways. Our work will provide a better understanding of the process of autophagy and will hopefully lead to rationally designed therapies that will improve cancer patient outcomes.